



US006355799B1

(12) United States Patent
Gupta et al.(10) Patent No.: US 6,355,799 B1
(45) Date of Patent: Mar. 12, 2002

(54) SUBSTITUTED BENZENE COMPOUNDS, PROCESS FOR THEIR PREPARATION, AND HERBICIDAL AND DEFOLIANT COMPOSITIONS CONTAINING THEM

(75) Inventors: Sandeep Gupta, Concord, OH (US); Shao-Yong Wu, Fremont, CA (US); Masamitsu Tsukamoto, Mayfield Heights; David A. Pulman, Mentor, both of OH (US); Bai-Ping Ying, Indianapolis, IN (US)

(73) Assignee: ISK Americas Incorporated, Concord, OH (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/530,373

(22) PCT Filed: Aug. 21, 1998

(86) PCT No.: PCT/US98/17197

§ 371 Date: Apr. 27, 2000

§ 102(e) Date: Apr. 27, 2000

(87) PCT Pub. No.: WO99/21837

PCT Pub. Date: May 6, 1999

Related U.S. Application Data

(63) Continuation-in-part of application No. 08/958,313, filed on Oct. 27, 1997.

(51) Int. Cl.⁷ C07D 239/02

(52) U.S. Cl. 544/309; 544/311; 544/312

(58) Field of Search 544/242, 309, 544/311, 312

(56) References Cited

U.S. PATENT DOCUMENTS

4,746,352 A	5/1988	Wenger et al.	71/90
4,859,229 A	8/1989	Wenger et al.	71/92
4,881,967 A	11/1989	Semple	71/92
4,927,451 A	5/1990	Brouwer et al.	71/92
5,084,085 A	1/1992	Theodoridis	71/92
5,116,404 A	5/1992	Ishii et al.	71/92
5,169,431 A	12/1992	Enomoto et al.	71/92
5,281,571 A	1/1994	Woddard et al.	504/225
5,281,574 A	1/1994	Enomoto et al.	504/243
5,356,863 A	10/1994	Satow et al.	504/243
5,441,925 A	8/1995	Theodoridis	504/243
5,476,834 A	12/1995	Takemura et al.	504/243
5,602,077 A	2/1997	Amuti et al.	504/243
5,759,957 A	6/1998	Andree et al.	504/243

FOREIGN PATENT DOCUMENTS

EP	705829	10/1996
JP	03215476	* 9/1991
JP	09301973	* 11/1997
WO	WO 8501939	5/1985
WO	9100278	* 1/1991
WO	WO 95/02580	1/1995
WO	WO 95/23509	9/1995

WO	WO 9/07104	2/1997
WO	WO 97/06150	2/1997
WO	9708170	* 3/1997
WO	WO 9708171	3/1997
WO	WO 97/11060	3/1997
WO	WO 9712886	4/1997
WO	WO 971/12883	4/1997
WO	WO 97/28127	8/1997
WO	9742188	* 11/1997

OTHER PUBLICATIONS

Chemical Abstracts, vol. 96, No. 24, Jun. 14, 1982, p. 43, column 1, Abstract No. 200709g, Chernikov, A.Y. et al. Thermostable Composition. FR 2,476,068, Aug. 21, 1981. Chemical Abstracts, vol. 69, No. 23, Dec. 2, 1968, p. 8993, column 1, Abstract No. 96206v, Agripat, S.A. "2-Nitro-3(and 5)-phenoxy(and phenylthio)anilines and their 0-phenylenediamine derivatives." FR 1,499,717, Oct. 27, 1967.

Chemical Abstracts, vol. 45, No. 16, Aug. 25, 1951, p. 1951, column 1, Abstract No. 7033, Finger, G.C. et al., "Aromatic Fluorine compounds. II. 1,2,4,5-Tetrafluorobenzene and related compounds" J. Am. Chem. Soc., 1951, 73, 145-9. Hall et al. "Formation of cis, cis-1, 4-Dicyano-1,3-butadienes by Thermal Decomposition of 1,2-Diazidobenzenes", Journal of the American Chemical Society, Nov. 8, 1967, vol. 89, No. 23, pp. 5856-5861.

Wittek, P.J. "Synthetic Studies of the Antitumor Antibiotic Stretonigrin. 3 synthesis of the C-D Ring of Strepoigrin by an Unsymmetrical Ullmann Reaction", Journal of Organic Chemistry, Mar. 1979, vol. 44, No. 5 pp. 870-872. Meegalla SK et al., "Synthesis and Pharmacological Evaluation of Isoindolo[1,2-b]quinazolinone and Isoindolo[2,1-a]benzimidazole Derivatives Related to the Antitumor Agent Batracylin", Journal of Medicinal Chemistry, Sep. 30, 1994, vol. 37, No. 20, pp. 3434-3439.

Kato S. et al., "Synthesis of 4-Chloro-7-ethoxy-2(3H)-benzoxazolone-6-carboxylic Acid", Journal of Heterocyclic Chemistry, Jul.-Aug. 1996, vol. 33, No. 4, pp. 1171-1178.

* cited by examiner

Primary Examiner—Mukund J. Shah

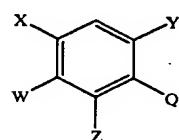
Assistant Examiner—Sudhaker B Patel

(74) Attorney, Agent, or Firm—Sughrue, Mion, Zinn, Macpeak & Seas, PLLC

(57)

ABSTRACT

Novel herbicidal and defoliant substituted aniline derived compounds represented by general structure (I)



are described. W, X, Y, Z, and Q are as defined in the disclosure. Also described are the processes for the manufacture of these compounds and agriculturally suitable compositions containing these as active ingredients which are useful as herbicides for general or selective pre-emergent or post-emergent control of undesired plant species and defoliants at very low concentrations of these biologically active compounds.